

App. No. 10/036,919
Atty. Docket No. 10122A
Amtd. dated August 11, 2003
Reply to Office Action of May 21, 2003

Amendments to the Claims:

The following listing of claims will replace all prior versions, and listings, of claims in the Application:

Listing of Claims:

Claims 1-19 (canceled)

Claim 20 (new): A biaxially oriented multi-layer film oriented in a transverse direction and a machine direction comprising:

- (a) a core layer comprising at least about 90% of a syndiotactic polypropylene polymer;
- (b) at least one additional layer adjacent to the core layer comprising a material selected from the group consisting of butene-1-propylene random copolymer, ethylene-propylene block copolymer, nylon, polyester, ethylene-vinyl acetate copolymer, ethylene-vinyl alcohol copolymer, ethylene-propylene-butene-1 random terpolymer containing 1 to 5 wt.% random ethylene and 10 to 25 wt.% random butene-1, low density polyethylene, linear low density polyethylene, medium density polyethylene, high density polyethylene, and blends thereof; and
- (c) wherein the film has a modulus measured in the transverse direction and a modulus measured in the machine direction and the ratio of the modulus in the transverse direction to the modulus in the machine direction is from about 1.5 to about 2.0.

Claim 21 (new): The biaxially oriented multi-layer film of claim 20 further comprising a skin layer adjacent to at least one additional layer wherein the skin layer comprises a polyolefin.

Claim 22 (new): The biaxially oriented multi-layer film of claim 21 having an elongation to break measured in the machine direction and an elongation to break measured in the transverse direction and the ratio of the elongation to break in the machine direction to the elongation to break in the transverse direction is from about 2.3 to about 4.1.

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Claim 23 (new): The biaxially oriented multi-layer film of claim 22 wherein the skin layer is a polyolefin selected from the group consisting of isotactic polypropylene, ethylene-propylene random copolymer, ethylene-propylene block copolymer, ethylene-propylene-butene-1 terpolymer, and blends thereof.

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Claim 24 (new): The biaxially oriented film multi-layer film of claim 23 wherein the ratio of the modulus in the transverse direction to the modulus in the machine direction is from about 1.53 to about 1.94.

Claim 25 (new): The biaxially oriented multi-layer film of claim 24 comprising a second layer adjacent to the core layer comprising a material selected from the group consisting of butene-1-propylene random copolymer, ethylene-propylene block copolymer, nylon, polyester, ethylene-vinyl acetate copolymer, ethylene-vinyl alcohol copolymer, ethylene-propylene-butene-1 random terpolymer containing 1 to 5 wt.% random ethylene and 10 to 25 wt.% random butene-1, low density polyethylene, linear low density polyethylene, medium density polyethylene, high density polyethylene, and blends thereof.

Claim 26 (new): The biaxially oriented multi-layer film of claim 25 having an ultimate tensile strength measured in the transverse direction and an ultimate tensile strength measured in the machine direction and the ratio of the ultimate tensile strength measured in the transverse direction to the ultimate tensile strength in the machine direction is from about 1.3 to about 2.3.

Claim 27 (new): The biaxially oriented multi-layer film of claim 21 having a coating comprising a material selected from the group consisting of polyvinylidene chloride, a polyvinyl alcohol, an acrylic polymer, and blends thereof.

Claim 28 (new): The biaxially oriented multi-layer film of claim 21 wherein the at least one additional layer comprises silica particles.

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Claim 29 (new): The biaxially oriented multi-layer film of claim 21 comprising an alicyclic hydrocarbon.

Claim 30 (new): A biaxially oriented multi-layer film which comprises:

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- (a) a core layer comprising a syndiotactic propylene polymer;
 - (b) a first outer layer adjacent to a first side of the core layer wherein the first outer layer comprises a material selected from the group consisting of butene-1-propylene random copolymer, ethylene-propylene block copolymer, nylon, polyester, ethylene-vinyl acetate copolymer, ethylene-vinyl alcohol copolymer, ethylene-propylene-butene-1 random terpolymer containing 1 to 5 wt.% random ethylene and 10 to 25 wt.% random butene-1, low density polyethylene, linear low density polyethylene, medium density polyethylene, high density polyethylene, and blends thereof;
 - (c) a second outer layer applied to an outer surface of the first outer layer, wherein the second outer layer comprises a material selected from the group consisting of butene-1-propylene random copolymer, ethylene-propylene block copolymer, nylon, polyester, ethylene-vinyl acetate copolymer, ethylene-vinyl alcohol copolymer, ethylene-propylene-butene-1 random terpolymer containing 1 to 5 wt.% random ethylene and 10 to 25 wt.% random butene-1, low density polyethylene, linear low density polyethylene, medium density polyethylene, high density polyethylene, and blends thereof;
 - (d) a third outer layer adjacent to a second side of the core layer, wherein the third outer layer comprises a material selected from the group consisting of butene-1-propylene random copolymer, ethylene-propylene block copolymer, nylon, polyester, ethylene-vinyl acetate copolymer, ethylene-vinyl alcohol copolymer, ethylene-propylene-butene-1 random terpolymer containing 1 to 5 wt.% random ethylene and 10 to 25 wt.% random butene-1, low density polyethylene, linear low density polyethylene, medium density polyethylene, high density polyethylene, and blends thereof;
 - (e) a fourth outer layer applied to an outer surface of the third outer layer, wherein the fourth outer layer comprises a material selected from the group consisting of butene-

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1-propylene random copolymer, ethylene-propylene block copolymer, nylon, polyester, ethylene-vinyl acetate copolymer, ethylene-vinyl alcohol copolymer, ethylene-propylene-butene-1 random terpolymer containing 1 to 5 wt.% random ethylene and 10 to 25 wt.% random butene-1, low density polyethylene, linear low density polyethylene, medium density polyethylene, high density polyethylene, and blends thereof; and

- (f) wherein the film has a modulus measured in the transverse direction and a modulus measured in the machine direction and the ratio of the modulus in the transverse direction to the modulus in the machine direction is from about 1.5 to about 2.0.

Claim 31 (new): The biaxially oriented multi-layer film of claim 30 having an elongation to break measured in the machine direction and an elongation to break measured in the transverse direction and the ratio of the elongation to break in the machine direction to the elongation to break in the transverse direction is from about 2.3 to about 4.1.

Claim 32 (new): The biaxially oriented multi-layer film of claim 31 having an ultimate tensile strength measured in the transverse direction and an ultimate tensile strength measured in the machine direction and the ratio of the ultimate tensile strength measured in the transverse direction to the ultimate tensile strength in the machine direction is from about 1.3 to about 2.3.

Claim 33 (new): The biaxially oriented multi-layer film of claim 32 wherein the ratio of the modulus in the transverse direction to the modulus in the machine direction is from about 1.53 to about 1.94.

Claim 34 (new): A process for preparing a biaxially oriented multi-layer film comprising the steps of:

- (a) melt coextruding a film comprising: (i) a core layer comprising at least about 90% of a syndiotactic polypropylene, (ii) a first additional layer adjacent to a first side of the core layer comprising materials selected from the group consisting of butene-1-

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propylene random copolymer, ethylene-propylene block copolymer, nylon, polyester, ethylene-vinyl acetate copolymer, ethylene-vinyl alcohol copolymer, ethylene-propylene-butene-1 random terpolymer containing 1 to 5 wt.% random ethylene and 10 to 25 wt.% random butene-1, low density polyethylene, linear low density polyethylene, medium density polyethylene, high density polyethylene, and blends thereof, and (iii) a second additional layer adjacent to a second side of the core layer comprising materials selected from the group consisting of butene-1-propylene random copolymer, ethylene-propylene block copolymer, nylon, polyester, ethylene-vinyl acetate copolymer, ethylene-vinyl alcohol copolymer, ethylene-propylene-butene-1 random terpolymer containing 1 to 5 wt.% random ethylene and 10 to 25 wt.% random butene-1, low density polyethylene, linear low density polyethylene, medium density polyethylene, high density polyethylene, and blends thereof, and

(b) biaxially orienting the coextruded combination in a machine and a transverse direction to form a film having a modulus measured in the transverse direction and a modulus measured in the machine direction and the ratio of the modulus in the transverse direction to the modulus in the machine direction is from about 1.5 to about 2.0.

Claim 35 (new): The process for preparing the biaxially oriented multi-layer film of claim 34 wherein the oriented multi-layer film has an elongation to break measured in the machine direction and an elongation to break measured in the transverse direction and the ratio of the elongation to break in the machine direction to the elongation to break in the transverse direction is from about 2.3 to about 4.1.

Claim 36 (new): The process for preparing the biaxially oriented multi-layer film of claim 35 wherein the film has an ultimate tensile strength measured in the transverse direction and an ultimate tensile strength measured in the machine direction and the ratio of the ultimate tensile strength measured in the transverse direction to the ultimate tensile strength in the machine direction is from about 1.3 to about 2.3.

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Claim 37 (new): The process for preparing the biaxially oriented multi-layer film of claim 36 wherein the ratio of the modulus in the transverse direction to the modulus in the machine direction is from about 1.53 to about 1.94.
